

### **REMARKS**

In the foregoing claim amendments, claims 1-7, 9-14, 20-29, 35 and 45 have been amended. Pending in the application are claims 1-46, of which claims 1, 20, 35 and 45 are independent. The following comments address all stated grounds for rejection, and the Applicants respectfully submit that the presently pending claims, as identified above, are now in a condition for allowance.

#### **Claim Amendments**

Applicants have amended claims 1-7, 9-14, 20-29, 35 and 45 to clarify the scope of the claimed invention. In particular, claims 1-7 and 9-14 have been amended to change first, second and third modules to a fiber interface unit, *a port chassis unit* and a switch chassis unit, respectively. Claims 20-29 have been amended to change first, second and third modules to a fiber interface unit, *a transponder interface unit* and a switch chassis unit, respectively.

Furthermore, claims 1 and 20 have been amended to recite that the port chassis unit and the switch chassis unit are integrated on a single platform, and that the fiber interface unit and the transponder interface unit are integrated on a single platform, respectively. Claim 35 has been amended to recite that the steps of extracting, allocating and switching a plurality of signal components are performed on a single platform. Claim 45 has been amended to recite that the plurality of port interface circuit card assemblies and the plurality of optical transceivers are integrated on a single platform. Support for the claim amendments can be found at page 8, line 24-31 of the pending application and pages 3-4 of the provisional application to which the pending application claims a priority. No new matter has been introduced.

#### **Objection to the Drawings**

The drawings are objected to under 37 C.F.R. 1.83(a) because the drawings do not show every feature of the invention specified in the claims. In the foregoing claim amendments, Applicants have amended claims 1-7 and 9-19 to change first, second and third modules to a fiber interface unit, a port chassis unit and a switch chassis unit, respectively, that are depicted in the drawings. Applicants have also amended claims 20-29 to change first, second and third

modules to a fiber interface unit, a transponder interface unit and a switch chassis unit, respectively, that are depicted in the drawings.

The Examiner also notes in the Office Action that the wavelength to circuit adaptation, one or more circuit layer functions, a wavelength dispersion compensation and per circuit performance monitoring, which are recited in dependent claims, are not depicted in the drawings. Applicants submit that these features are described in the Specification with reference to the elements depicted in the drawings. In particular, the wavelength to circuit adaptation, one or more circuit layer functions, a wavelength dispersion compensation, and per circuit performance monitoring are described in connection with the photo detector (444 in Figure 5B), port interface card (in Figure 5B), dispersion compensation system (214 in Figure 2A), and port management (410 in Figure 4A), respectively.

The Examiner further notes in the Office Action that wavelength power balancing, wavelength protection, signal regeneration and electrical add and drop functions are not depicted in the drawings. With the foregoing claim amendments, Applicants submit that the wavelength power balancing, wavelength protection and signal regeneration recited in dependent claims are well-known to those of ordinary skill in the art of Wavelength Division Multiplexing (WDM) networks although they are novel when combined with the subject matter recited in independent claims. Applicants therefore believe that those of ordinary skill in the art of WDM networks can practice the subject matter added in dependent claims without undue experiment although they are not depicted specifically in the drawings of the pending application.

In light of the foregoing claim amendments and arguments, Applicants request the Examiner reconsider and withdraw the objection to the drawings.

#### Claim Rejections - 35 U.S.C. §112

Claims 1-44 are rejected under 35 U.S.C. §112, first paragraph, as failing to comply with the enablement requirement. The Examiner notes in the Office Action that the claims contain subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains to make and/or use the invention.

In the foregoing claim amendments, Applicants have amended claims 1-7 and 9-19 to change first, second and third modules to a fiber interface unit, a port chassis unit and a switch chassis unit, respectively, that are described in the specification. Applicants have also amended claims 20-29 to change first, second and third modules to a fiber interface unit, a transponder interface unit and a switch chassis unit, respectively, that are described in the specification.

The Examiner also notes in the Office Action that the wavelength to circuit adaptation, one or more circuit layer functions, a wavelength dispersion compensation and per circuit performance monitoring, which are recited in dependent claims, are not described in the specification. Applicants submit that these features are described in the specification with reference to the elements depicted in the figures. In particular, the wavelength to circuit adaptation, one or more circuit layer functions, a wavelength dispersion compensation, and per circuit performance monitoring are described in the specification with reference to the photo detector (444 in Figure 5B), port interface card (in Figure 5B), dispersion compensation system (214 in Figure 2A), and port management (410 in Figure 4A), respectively.

The Examiner further notes in the Office Action that wavelength power balancing, wavelength protection, signal regeneration and electrical add and drop functions are not described in the specification. With the foregoing claim amendments, Applicants submit that the wavelength power balancing, wavelength protection and signal regeneration recited in dependent claims are well-known to those of ordinary skill in the art of Wavelength Division Multiplexing (WDM) networks although they are novel when combined with the subject matter recited in independent claims. Applicants therefore believe that those of ordinary skill in the art of WDM networks can practice the subject matter added in dependent claims without undue experiment although they are not described specifically in the specification of the pending application.

In light of the foregoing claim amendments and arguments, Applicants request the Examiner reconsider and withdraw the rejection of claims 1-44 under 35 U.S.C. §112, first paragraph, and pass the claims to allowance.

Claim Rejections - 35 U.S.C. 102

Claims 1, 2, 4-6, 15, 20, 22, 23, 30, 35, 45 and 46 are rejected under 35 U.S.C. §102(e) as being anticipated by U.S. Patent Application Publication No. 2002/0135835 (“Lauder”). Applicants respectfully traverse the rejection for the following reasons.

Claims 1, 2, 4-6, 15 and 35

Independent claim 1 recites an optical node for processing an incoming optical signal in a wavelength division multiplexing (WDM) optical network. The optical node includes a fiber interface unit, a port chassis unit and a switch chassis unit. The port chassis unit has a plurality of input ports and a plurality of output ports coupled to the fiber interface unit, and extracts signal components from each of the wavelengths processed by the fiber interface unit. *The port chassis unit and the switch chassis unit are integrated on a single platform.* Claims 2, 4-6 and 15 depend upon claim 1, and claim 35 is a method claim that recites similar limitations.

Applicants respectfully submit that the cited reference fails to disclose each and every element of the claimed invention. Applicants submit that Lauder fails to disclose that *the port chassis unit and the switch chassis unit are integrated in a single platform*, as recited in claim 1, and that *the steps of extracting, allocating and switching the plurality of signal components are performed on a single platform*, as recited in claim 35.

Lauder discloses a network structure in which network elements of a WDM network are connected to other network elements on another optical network. The Examiner notes in the Office Action that Lauder discloses a trunk interface card (TIC) and a switch, which correspond to the port chassis unit and the switch chassis unit of the claimed invention, respectively. Lauder discloses in Fig. 6 that the TIC (615) is located in a different hub (604) than the hub (615) of the switch (108). Lauder does not disclose that the TIC and the switch are integrated on a single platform, as recited in the claimed invention.

In light of the foregoing claim amendments and arguments, Applicants respectfully submit that Lauder fails to disclose each and every element of claims 1 and 35. Applicants

therefore request the Examiner reconsider and withdraw the rejection of claims 1, 2, 4-6, 15, and 35 under 35 U.S.C. §102(e), and pass the claims to allowance.

Claims 20, 22, 23 and 30

Independent claim 20 recites an optical node for processing an incoming optical signal in a wavelength division multiplexing (WDM) optical network. The optical node includes a fiber interface unit, a transponder interface unit and a switch chassis unit. The switch chassis unit has a plurality of input ports and a plurality of output ports coupled to the transponder interface unit. *The transponder interface unit extracts signal components from each of the wavelengths processed by the fiber interface unit, and switches the signal components in a time domain.* The fiber interface unit and the transponder interface unit are integrated on a single platform. Claims 22, 23 and 30 depend upon claim 20.

Applicants respectfully submit that the cited reference fails to disclose each and every element of the claimed invention. Applicants submit that Lauder fails to disclose that *the transponder interface unit extracts signal components from each of the wavelengths processed by the fiber interface unit, and switches the signal components in a time domain*, as recited in claim 20.

Lauder discloses a network structure in which network elements of a WDM network are connected to other network elements on another optical network. The Examiner notes in the Office Action that Lauder discloses a DWDM ring interface and a trunk interface card (TIC), which correspond to the fiber interface unit and transponder interface unit of the claimed invention, respectively. Lauder, however, does not disclose that the TIC (615) extracts a plurality of signal components from each of the wavelengths and switches the plurality of signal components in a time domain, as recited in claim 20.

In light of the foregoing claim amendments and arguments, Applicants respectfully submit that Lauder fails to disclose each and every element of claim 20. Applicants therefore request the Examiner reconsider and withdraw the rejection of claims 20, 22, 23 and 30 under 35 U.S.C. §102(e), and pass the claims to allowance.

Claims 45 and 46

Independent claim 46 recites an optical switch node including a plurality of port interface circuit card assemblies having a plurality of dense wavelength division multiplexing (DWDM) lasers for interconnecting the plurality of port interface circuit card assemblies with a DWDM network. The optical switch node also include a plurality of optical transceivers to interconnect the plurality of port interface circuit card assemblies with a switch chassis. *The plurality of port interface circuit card assemblies and the plurality of optical transceivers are integrated on a single platform.* Claim 46 depends upon claim 45.

Applicants respectfully submit that the cited reference fails to disclose each and every element of the claimed invention. Applicants submit that Lauder fails to disclose that *the plurality of port interface circuit card assemblies and the plurality of optical transceivers are integrated on a single platform*, as recited in claim 45.

Lauder discloses a network structure in which network elements of a WDM network are connected to other network elements on another optical network. Lauder discloses in Fig. 2 a DWDM transceiver (204) for receiving and transmitting a DWDM signal. Lauder, however, does not disclose a plurality of optical transceivers interconnecting the TIC (102) with a switch (108), as recited in the claimed invention. In particular, Lauder does not disclose that the *plurality of TICs (102, 120, 140) and the plurality of optical transceivers are integrated on a single platform*.

In light of the foregoing claim amendments and arguments, Applicants respectfully submit that Lauder fails to disclose each and every element of claim 45. Applicants therefore request the Examiner reconsider and withdraw the rejection of claims 45 and 46 under 35 U.S.C. §102(e), and pass the claims to allowance.

Claim Rejections - 35 U.S.C. 102

Claims 1-7, 20-23 and 30-35 are rejected under 35 U.S.C. §102(b) as being anticipated by U.S. Patent No. 5,303,077 ("Bottle"). Applicants respectfully traverse the rejection for the following reasons.

Applicants respectfully submit that the cited reference fails to disclose each and every element of the claimed invention. Applicants submit that Bottle fails to disclose *an optical node in a wavelength division multiplexing (WDM) network*, as recited in claims 1 and 20.

Bottle discloses a switching device for buffering signals in which all multiplex modes (space, time wavelength) are combinable. (See, Bottle, column 1, lines 65-68). Bottle also discloses inserting time-slot-interchanging (TSI) or wavelength-converting devices between every two space division networks to compensate for random variations in a number of equivalent serving channels. (See, Bottle, column 1, lines 56-62 and column 2, lines 1-5). Bottle, however, does not disclose that the switching device is an optical node in a wavelength division multiplexing (WDM) network, as recited in claims 1 and 20.

Additionally, Applicants submit that Bottle fails to disclose *a port chassis unit with a plurality of input ports and a plurality of output ports coupled to the fiber interface unit*, as recited in claim 1.

Bottle discloses a functional unit (17) including TSI devices (121, 12n) and a space switch (13). The Examiner notes in the Office Action that the functional unit (17) corresponds to the port chassis unit of the claimed invention. Bottle discloses that the functional unit (17) has input ports coupled to the input circuits (111, 11n) and output ports coupled to another functional unit (18). Bottle, however, does not disclose that the functional unit (17) has a plurality of input ports and a plurality of output ports coupled to the input circuits (111, 11n), as recited in claim 1.

Additionally, Applicants submit that Bottle fails to disclose *a switch chassis unit with a plurality of input ports and a plurality of output ports coupled to the transponder interface unit*, as recited in claim 20.

Bottle discloses space switches (13, 15) in the functional units (17, 18). The Examiner notes in the Office Action that the space switch disclosed in Bottle corresponds to the switch chassis unit of the claimed invention. The space switch (13) disclosed in Bottle has input ports coupled to the TSI devices (121, 12n) and output ports coupled to the functional unit (18). The space switch (15) disclosed in Bottle has input ports coupled to the wavelength-converter

devices (141, 14n) and output ports coupled to next switching modules (10). Bottle does not disclose that the space switches has a plurality of input ports and a plurality of output ports coupled to the transponder interface unit, as recited in claim 20.

Additionally, Applicants submit that Bottle fails to disclose that *the steps of extracting, allocating and switching the plurality of signal components are performed on a single platform*, as recited in claim 35.

Bottle discloses extracting control information contained in the data stream in the input circuit (111, 11n). (See, Bottle, column 2, lines 63-68). Bottle, however, does not disclose extracting a plurality of signal components from a wavelength and switching the plurality of signal components. The extracted control information is not switched in Bottle. In particular, Bottle does not disclose that the steps of extracting and switching the plurality of signal components are performed on a single platform, as recited in claim 35.

In light of the foregoing claim amendments and arguments, Applicants submit that Bottle fails to disclose each and every element of claims 1, 20 and 35. Applicants therefore request the Examiner reconsider and withdraw the rejection of claims 1-7, 20-23 and 30-35 under 35 U.S.C. §102(b), and pass the claims to allowance.

#### Claim Rejections - 35 U.S.C. 103

Claims 13, 28, 36 are rejected under 35 U.S.C. §103(a) as being unpatentable over Lauder in view of U.S. Application Publication No. 2001/0050790 ("Graves"). Applicants respectfully traverse the rejection for the following reasons.

Claim 13, 28 and 36 depend upon claims 1, 20 and 35 and add the limitation of a wavelength amplification function, respectively. Applicants respectfully submit that the cited references fail to teach or suggest all of the limitations of the claimed invention. Applicants submit that Lauder and Graves fail to teach that *the port chassis unit and the switch chassis unit are integrated in a single platform*, as recited in claim 1, that *the transponder interface unit extracts signal components from each of the wavelengths processed by the fiber interface unit, and switches the signal components in a time domain*, as recited in claim 20, and that *the steps of*



*extracting, allocating and switching the plurality of signal components are performed on a single platform, as recited in claim 35.*

Graves is cited by the Examiner to provide a teaching for the wavelength amplification function. Grave teaches a photonic network node and a gateway function on a wavelength layer. Graves, however, does not teach that the port chassis unit and the switch chassis unit are integrated in a single platform, that the steps of extracting, allocating and switching the plurality of signal components are performed on a single platform, and that the transponder interface unit extracts signal components from each of the wavelengths processed by the fiber interface unit, and switches the signal components in a time domain, as recited in claims 1, 20 and 35, respectively.

In light of the foregoing claim amendments and arguments, Applicants submit that Lauder and Graves fail to teach or suggest all of limitations of claims 1, 20 and 35. Claims 13, 28, 36, which depend upon claims 1, 20 and 35, respectively, are not rendered obvious over the cited prior art references. Applicants therefore request the Examiner reconsider and withdraw the rejection of claims 13, 28, 36 under 35 U.S.C. §103(a) and pass the claims to allowance.

Claim Rejections - 35 U.S.C. 103

Claims 9-19, 24-29, 31-34 and 36-44 are rejected under 35 U.S.C. §103(a) as being unpatentable over Bottle in view of Graves. Applicants respectfully traverse the rejection for the following reasons.

Claim 9-19, 24-29, 31-34 and 36-44 depend upon one of claims 1, 20 and 35 and add limitations to independent claims. Applicants respectfully submit that the cited references fail to teach or suggest all of the limitations of the claimed invention. Applicants submit that Bottle and Graves fail to teach *a port chassis unit with a plurality of input ports and a plurality of output ports coupled to the fiber interface unit*, as recited in claim 1, *a switch chassis unit with a plurality of input ports and a plurality of output ports coupled to the transponder interface unit*, as recited in claim 20, and that *the steps of extracting, allocating and switching the plurality of signal components are performed on a single platform*, as recited in claim 35.

Graves is cited by the Examiner to provide teachings for the limitations added in dependent claims. Grave teaches a photonic network node and a gateway function on a wavelength layer. Graves, however, does not teach a port chassis unit with a plurality of input ports and a plurality of output ports coupled to the fiber interface unit, a switch chassis unit with a plurality of input ports and a plurality of output ports coupled to the transponder interface unit, as recited in claims 1 and 20. Also, Graves does not teach that the steps of extracting, allocating and switching the plurality of signal components are performed on a single platform, as recited in claim 35.

In light of the foregoing claim amendments and arguments, Applicants submit that Bottle and Graves fail to teach or suggest all of limitations of claims 1, 20 and 35. Claims 9-19, 24-29, 31-34 and 36-44, which depend upon one of claims 1, 20 and 35, are not rendered obvious over the cited prior art references. Applicants therefore request the Examiner reconsider and withdraw the rejection of claims 9-19, 24-29, 31-34 and 36-44 under 35 U.S.C. §103(a) and pass the claims to allowance.

Claim Rejections - 35 U.S.C. 103

Claim 8 is rejected under 35 U.S.C. §103(a) as being unpatentable over Lauder or Bottle in view of U.S. Patent No. 6,687,280 (“Kajita”). Applicants respectfully traverse the rejection for the following reasons.

Claim 8 depends upon claim 1 and adds the limitation that the transceiver includes a vertical cavity surface emitting laser diode (VCSEL). Applicants respectfully submit that the cited references fail to teach or suggest all of the limitations of claim 1. Applicants submit that Lauder and Kajita fail to teach that *the port chassis unit and the switch chassis unit are integrated in a single platform*, as recited in claim 1.

Kajita is cited by the Examiner to provide teachings for the limitation added in claim 8. Kajita teaches a VCSEL that is substantially independent of temperature. Kajita, however does not teach that the port chassis unit and the switch chassis unit are integrated in a single platform, as recited in claim 1.

Additionally, Applicants submit that Bottle and Kajita fail to teach *a port chassis unit with a plurality of input ports and a plurality of output ports coupled to the fiber interface unit*, as recited in claim 1.

Kajita is cited by the Examiner to provide teachings for the limitation added in claim 8. Kajita teaches a VCSEL that is substantially independent of temperature. Kajita, however does not teach a port chassis unit with a plurality of input ports and a plurality of output ports coupled to the fiber interface unit, as recited in claim 1.

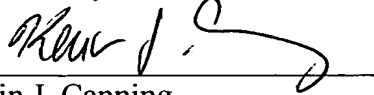
In light of the foregoing claim amendments and arguments, Applicants submit that Lauder or Bottle and Kajita fail to teach or suggest all of limitations of claim 1. Claim 8, which depends upon claim 1, is not rendered obvious over the cited prior art references. Applicants therefore request the Examiner reconsider and withdraw the rejection of claim 8 under 35 U.S.C. §103(a) and pass the claim to allowance.

### **CONCLUSION**

In view of the above, each of the presently pending claims in this application is believed to be in condition for allowance. Accordingly, the Examiner is respectfully requested to pass this application to issue. If, however, the Examiner considers that further obstacles to allowance of these claims persist, we invite a telephone call to Applicant's representative.

Dated: January 31, 2005

Respectfully submitted,

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